

## REMARKS

Applicants would like to thank Examiner Chin for kindly conducting a helpful telephonic interview with Applicants' representative, Jayme Huleatt, on May 27, 1999. Applicants have amended the claims in an effort to follow the suggestions of the examiner.

Upon entry of this amendment, claims 1-4, 6-17, 19-26, 31, 32 and 34 are pending in this application. Claims 1, 6, 7, 14, 19, 20, 32 and 34 are amended and claims 8, 18 and 33 are canceled. The amendments to the claims have support in the specification and claims as originally filed.

### Rejection under 35 U.S.C. §103

Claims 1-26 and 31-34 were rejected as being obvious over Lattin *et al.* ("Lattin"). The examiner stated that Lattin discloses treating meat products with quaternary ammonium compounds (QACs) and that shortening the contact times to determine the optimal contact time needed for treatment is well within the skill of the artisan. The examiner concluded that it would be obvious to treat non-poultry meats with QACs with a reasonable expectation of success based upon the disclosure of Lattin.

Applicants respectfully disagree with the examiner's rationale for applying Lattin to the present set of pending claims. The present invention represents a patentably distinct invention over Lattin. Applicants believe that it may be helpful to the Examiner to organize the arguments and direct them to specific groupings of claims.

### Claims 1-4, 6-13 and 31

In regard to claims 1-4, 6-13 and 31 directed to a method of preventing the growth of microorganisms other than *Salmonella* on non-poultry meat products by contacting the meat with the recited QACs for about 20 seconds to about less than 10 minutes to prevent the growth of microorganisms other than *Salmonella*, the following arguments are presented:

For the examiner to support a *prima facie* case of obviousness, the prior art must suggest applicants' invention. Obviousness "cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion

supporting the combination.'" *In re Fine*, 5 USPQ2d 1596, 1599 (Fed. Cir. 1988), *citing ACS Hosp. Sys. v. Montefiore Hosp.*, 221 USPQ 929, 933 (Fed. Cir. 1984). In further support of this position, *In re Dow Chemical*, 5 USPQ2d 1529, 1531 holds that "both the suggestion and the expectation of success must be founded in the prior art, not in applicant's disclosure". It is applicants' position that as argued in the previous response that Lattin does not suggest that shorter contact times of less than 10 minutes can be used nor is there a suggestion or motivation in Lattin or any of the other prior art that one skilled in the art would want to shorten the contact time of the QACs with the meat product to prevent the growth of microorganisms on meat products.

Applicants disagree with the Examiner's remarks that it is not material to obviousness if prior art, such as Mustapha *et al.* and others, provided previously, use higher contact times for food contact surfaces. If scientific publications support Applicants' position that longer exposure times of disinfectants are required to eliminate microorganisms harbored on porous surfaces than on nonporous surfaces, and meat is considered a porous surface, then it follows that a person skilled in the art would expect that longer contact times with QACs, also would be required. It is Applicants' position that the previously provided scientific publications, in fact, provide a negative teaching for using the lower contact times recited in claims 1-4, 6-13 and 31 of the present invention. It may be routine to determine optimal contact times but if the prior art teaches against using a shorter contact time for porous surfaces then there is no motivation for the skilled person to experiment to determine lower contact times under 10 minutes.

Unexpectedly, the present inventors have determined that in fact, shorter QAC contact times with meat products could be utilized that were as effective as the longer contact times. The shorter contact times with QACs on meat products provide an unexpected advantage for using the claimed method in a commercial environment to disinfect large quantities of food, and represent a patentably distinct invention over Lattin. In view of the above amendments and arguments, it is requested that this rejection be withdrawn in regard to claims 1-4, 6-13 and 31.

Claims 14-17 and 19-26

In regard to claims 14-17 and 19-26 directed to a method of preventing the growth of microorganisms on seafood, vegetables or fruit products by contacting the meat with the recited QACs to prevent the growth of microorganisms, the following arguments are presented:

Applicants respectfully disagree with the Examiner's basis for this rejection. The Examiner stated that while there may be differences between food groups, e.g. meats, fruits, milk, etc., the fact is that Lattin treats meats. Applicants wish to point out that claim 14 is not directed to contacting QACs with meat. Lattin does not suggest that this treatment method would be effective on food products other than meat.

Applicants made numerous arguments in the previous response on pages 7-10 supported by many food scientific publication that different food groups behave differently when treated with antimicrobials. The Examiner again is directed to these arguments and publications. Applicants also maintain that the efficacy of an antimicrobial treatment on food within one food group is not a good predictor of the efficacy of this treatment on a food within another food group. Conversely, the success of an antimicrobial treatment on a food within a given food group may be a reasonably good predictor of its antimicrobial efficacy on another food with that same food group.

The concept of food groups is integral to food science. Foods within a certain food group share properties, such as similar composition and surface chemistry, similar pH, and similar moisture content. Six food groups relevant to this application and their properties are provided in Appendix A (enclosed herein). Within the meat group, Applicants have shown in this application and in the parent application, U.S. Serial No. 08/631,578, that QACs are efficacious against a wide variety of organisms on poultry and beef. Within the fruit group, Applicants have shown efficacy on grapes in this application (see Figure 4 and Example 10) and on apples (see enclosed Appendix B). Within the vegetable group, Applicants have shown efficacy on broccoli in this application (see Figure 5 and Example 10). Within the fish group, Applicants have shown efficacy on catfish in this application (see Figures 2 and 3 and Example 10). However, Applicants treated an edible fungi (mushrooms) with CPC and obtained rather

poor results of less than one log microbial kill despite the high CPC concentration levels (see enclosed Appendix C).

These testing results in the meat, fruit, vegetable and seafood groups show efficacy of CPC treatment for preventing the growth of microorganisms on these food surfaces. However, when a food group was tested that did not fall within one of these food groups (i.e., mushrooms), CPC did not provide an adequate microbial kill. Applicants contend that these results support their position that in food science, results obtained in the antimicrobial treatment of one food groups does not render obvious the outcome of the treatment in another food group. Applicants have shown the efficacious results in seafood, fruit and vegetables which Applicants contend are not obvious over the disclosure of Lattin that is directed to treating meat products. Applicants have shown consistent results within two food groups; i.e., meat – chicken and beef and fruit – grapes and apples. Applicants also have shown inconsistent, ineffective results in the treatment of a food outside one of the recited food groups of seafood, fruit and vegetables. For all of the foregoing reasons, Lattin does not render obvious the claims directed to the treatment of seafood, fruit and vegetables with QACs to prevent the growth of microorganisms on these food products. It is requested that this rejection be withdrawn in view of these arguments and supporting documents in regard to claims 14-17 and 19-26.

#### Claims 32 and 34

In regard to claims 32 and 34 directed to a method of preventing the growth of a pathogenic toxin-producing *Escherichia* on meat products by contacting the meat with the recited QACs to prevent the growth of the pathogenic toxin-producing *Escherichia*, the following arguments are presented:

Applicants contend that Lattin does not render obvious the subject matter of claims 32 and 34 that are limited to a method of preventing the growth of a pathogenic toxin-producing *Escherichia* on meat products. It should be noted that few antimicrobial agents useful in food processing are effective against pathogenic toxin-producing *Escherichia*, and particularly against, *E. coli* O157:H7. The ineffectiveness of organic acids, such as acetic, lactic and citric

acids against *E. coli* O157:H7 was evidenced by the recent outbreak in Washington State of this organism in naturally acidic apple cider as discussed in the previous response.

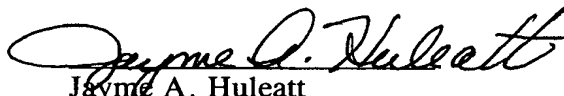
The data provided in the parent application, U.S. Serial No. 08/631,578 and provided herein as Appendices D - F show that it was more difficult to prevent the growth of *E. coli* O157 on chicken (Appendix D - showing reductions from 100% to 83% to 67% to 8% to 8%) and on beef (Appendix E - showing reductions from 100% to 100% to 100% to 42% to 24%) than preventing the growth of *Salmonella* on chicken (see Appendix F - showing reductions from 100% to 45% to 14% to 3% to 2%). It is Applicants contention that Lattin does render obvious a method for preventing the growth of *E. coli* O157 on meat products as it is more difficult to prevent the growth of *E. coli* O157 than *Salmonella*. For these reasons, it is requested that this obviousness rejection be withdrawn against claims 32 and 34.

#### CONCLUSION

Applicants respectfully request entry of this amendment. Upon entry thereof, Applicants submit that this application will be in condition for allowance, and they solicit an early indication to that effect. Should the Examiner believe that further discussion of any remaining issues would advance the prosecution, a telephone call to the undersigned, at the telephone number listed below, is courteously invited.

Respectfully submitted,

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Date

  
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